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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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07/02/2003

Gesine Arends

2493 A

5336

7590

10/10/2006

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Huntington, NY 11743

EXAMINER

LEUNG, JENNIFER A

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,798

Applicant(s)

ARENDT ET AL.

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 13, 2006 has been entered.

Response to Amendment

2. Applicant's amendment submitted on July 13, 2006 has been received and carefully considered. The changes made to the specification and drawings are acceptable. Claims 1-11 are under consideration.

Claim Objections

3. Claims 1, 2 and 11 are objected to because of the following informalities:

In claim 1, line 12: "the flow of educt matter (4)" should be changed to --the flow of matter (4)-- for consistency in claim terminology.

In claim 1, line 14: "first or second converters" should be changed to --first and second converters--.

In claim 1, line 14: --and-- should be inserted after "converters;".

In claim 2, line 4: "educt matter (4)" should be changed to --matter (4)-- for consistency in claim terminology.

In claim 11, line 2: "herein" should be changed to --wherein--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear as to the structural relationship of each of the “two flue gas partial flows” (line 4) to the other elements of the apparatus.

Regarding claim 3, “the at least one second heating element (9)” (which includes a single or plural heating elements) lacks proper positive antecedent basis, because claim 1 merely sets forth a single “second heating element (9)”. See also claim 4.

Regarding claim 5, it is unclear as to the relationship between the “flap” set forth in claim 1, line 18, and the “at least one apportioning element”. It appears from the specification that the “apportioning element” and the “flap” are the same element. See also claim 6.

Regarding claim 10, it is unclear as to where the body of the claim begins. Also, it is unclear as to the structural limitation applicant is attempting to recite by, “the apparatus (1) is formed according to claim 1,” because claim 1 is not directed towards a method of forming.

Regarding claim 11, it is unclear as to where the body of the claim begins. Also, it is unclear as to the structural limitation applicant is attempting to recite by, “the fuel assembly is formed according to claim 10,” because claim 10 is not directed towards a method of forming.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura (JP 62-74448).

Regarding claim 1, Kitamura (FIGs. 1-4; Abstract) discloses an apparatus comprising:
a heating apparatus (i.e., burner 4) for production of a heating stream, wherein the heating stream is separated into two flue gas partial flows (i.e., at conduit 12, the heating stream is divided between conduit 25 and the innermost layer of heat exchanger 24);

a first converter (i.e., the middle layer of heat exchanger 24, in communication with conduit 13) and a second converter (i.e., the reformer pipe 9) arranged behind the first converter in a flow direction of matter (i.e., as defined by the supply of reactants via conduits 17,18 to the discharge of generated hydrogen gas via conduit 16);

a first heating element flowed-through by the heating stream (i.e., the heating chamber 8

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defined by shell 1) for heating the second converter 9, wherein in at least one operating phase, the heating stream 8 for the second converter 9 flows completely counterflow to the flow of educt matter (i.e., the heating stream flows downward in chamber 8 whereas the matter may flow upwards in reformer tube 9; see FIG. 1, 2);

a second heating element (i.e., the innermost layer of heat exchanger 24, in communication with conduit 12) flowed-through by the heating stream for heating the first converter (i.e., for heating the middle layer of exchanger 24); and

an outlet opening (i.e., to conduit 26) provided on the second heating element, wherein the second heating element is provided with a control valve 28 for closing the outlet opening.

Kitamura, however, is silent as to the control valve 28 comprising a “flap” valve. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select/substitute a “flap” valve for the control valve 28 in the apparatus of Kitamura, on the basis of suitability for the intended use, because the Examiner takes Official Notice that “flap” valves are well known in the art as flow regulating structures, and the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claim 2, in at least one operating phase, the heating stream for the first converter flows completely in a counterflow direction to the flow of matter (see FIG. 4, wherein the heating stream flows upwards via conduit 12, and the matter flows downward via conduit 13). Also, in at least one operating phase, the heating stream for the second converter flows completely in a counterflow direction to the flow of matter (i.e., the heating stream flows

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downward in chamber 8, whereas the matter may flow upwards in reformer 9; see FIG. 1, 2).

Regarding claim 3, the apparatus of Kitamura structurally meets the claims because the second heating element (i.e., the innermost layer of heat exchanger 24) is provided for heating the first converter (i.e., the middle layer of heat exchanger 24), and the recitation of a desired operating period for the heating element (i.e., during a start phase) adds no further patentable weight to the claim.

Regarding claim 4, the second heating element (i.e., the innermost layer of heat exchanger 24) is disposed between the first converter (i.e., the middle layer of heat exchanger 24) and the second converter (i.e., reformer tube 9). (see FIG. 2, 3).

Regarding claims 5 and 6, the apparatus comprises an apportioning element (i.e., control valve 27 on conduit 25), wherein a control unit 30 is provided for controlling the apportioning element 27.

Regarding claim 7, the first converter (i.e. the middle layer of heat exchanger 24) and the second converter (i.e., reformer tube 9) are arranged approximately coaxially to one another (see FIGs. 3). Also, the first heating element (i.e., the heating chamber 8) and the second heating element (i.e., the innermost layer of heat exchanger 24) are arranged approximately coaxially to one another (see FIGs. 2, 3). Also, the first converter, second converter, first heating element and second heating element are arranged approximately coaxially to one another (see FIGs. 2-4).

Regarding claims 8 and 9, the heating apparatus (i.e., burner 4) is arranged approximately coaxially and centrally to the converters and/or the heating elements (see FIGs. 1-3).

Regarding claim 10, Kitamura discloses that the apparatus is provided in combination with a fuel cell unit (i.e., at a point downstream from element 21; see Abstract).

Regarding claim 11, although a motor vehicle is not described in the Abstract or shown in the figures, the modified apparatus of Kitamura structurally meets the claim because the recitation of a motor vehicle occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the fuel cell assembly of Kitamura in a motor vehicle, on the basis of suitability for the intended use, because the Examiner takes Official Notice that the use of fuel cells for powering motor vehicles is conventionally known in the art.

Response to Arguments

6. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection, necessitated by amendment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

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Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer A. Leung
September 30, 2006


ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER